ORIGINAL ARTICLE

Revised Prevalence Estimates of Mental Disorders in the United States

Using a Clinical Significance Criterion to Reconcile 2 Surveys' Estimates

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Background: Current US mental disorder prevalence estimates have limited usefulness for service planning and are often discrepant. Data on clinical significance from the National Institute of Mental Health Epidemiologic Catchment Area Program (ECA) and the National Comorbidity Survey (NCS) were used to produce revised estimates, for more accurate projections of treatment need and further explication of rate discrepancies.

Methods: To ascertain the prevalence of clinically significant mental disorders in each survey, responses to questions on life interference from, telling a professional about, or using medication for symptoms were applied to cases meeting symptom criteria in the ECA (n=20 861) and NCS (n=8098). A revised national prevalence estimate was made by selecting the lower estimate of the 2 surveys for each diagnostic category, accounting for comorbidity, and combining categories.

Results: Using data on clinical significance lowered the past-year prevalence rates of "any disorder" among 18- to 54-year-olds by 17% in the ECA and 32% in the NCS. For adults older than 18 years, the revised estimate for any disorder was 18.5%. Using the clinical significance criterion reduced disparities between estimates in the 2 surveys. Validity of the criterion was supported by associations with disabilities and suicidal behavior.

Conclusions: Establishing the clinical significance of disorders in the community is crucial for estimating treatment need. More work should be done in defining and operationalizing clinical significance, and characterizing the utility of clinically significant symptoms in determining treatment need even when some criteria of the disorder are not met. Discrepancies in ECA and NCS results are largely due to methodologic differences.

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AMONG THE issues facing the field of psychiatric epidemiology are 2 challenges for future research. The first relates to limitations in currently available surveys as tools for mental health service planning. Two large community surveys, the National Institute of Mental Health Epidemiologic Catchment Area Program (ECA) and the National Comorbidity Survey (NCS), have been the main sources for estimates of treatment need in the United States.[1-3] These surveys showed overall 1-year mental and addictive disorder prevalence rates approaching 30% and lifetime rates approaching 50%. If these prevalence rates are taken as a proxy for mental health treatment need, the mental health system would have to expand enormously to meet this need, with attendant increases in workforce deployment and overall costs. Alternatively, the clinical significance of these community-based rates, and therefore their suitability as a proxy for treatment need, has been questioned.[4,5] The high disorder rates in the ECA and NCS were accompanied by low service use rates, with less than one third of persons with an active mental disorder using mental health services in a 1-year period.[6,7] The extent to which the untreated cases represent unmet need for treatment as opposed to absence of need for treatment because of mild or transient symptoms is not clear.[8-11] A closer examination of the clinical significance of community prevalence rates is warranted.

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The second challenge is methodologic, having to do with explaining the differences in the prevalence rates of individual disorders between the ECA and the NCS. Reconciling these differences is important for policy and planning purposes, in that more consistent results will lead to less confusion among the end users of the data and more

METHODS

EPIDEMIOLOGIC SURVEYS

The National Institute of Mental Health ECA has been described at length in previous publications.[1,2,18] It was conducted from 1980 to 1985 in 5 sites, which provided 18 571 household and 2290 institutional residents 18 years and older. Two face-to-face interviews were done 12 months apart (wave 1 and wave 2). A telephone interview (face-to-face in New Haven, Conn) of the household respondents was conducted 6 months after wave 1. Questions on use of health services were asked at each interview. Diagnostic data were obtained at waves 1 and 2 only. The data were weighted to account for unequal probabilities of selection for each person sampled and for nonresponse. The data were also weighted on the basis of the age, sex, and race or ethnicity distribution of the 1990 US Census. The *DSM-III* psychiatric diagnoses were assessed with the DIS.

The NCS[3] was a cross-sectional survey of a nationally representative household sample of 8098 adolescents and adults aged 15 to 54 years, conducted from 1990 to 1992. Data were weighted to account for nonresponse and unequal probabilities of selection, and to adjust the data to national population distributions on the basis of the 1989 US National Health Interview Survey. The UM-CIDI was used to obtain *DSM-III-R* diagnoses. Although generalized anxiety disorder and posttraumatic stress disorder were assessed only in the NCS, obsessive-compulsive disorder, anorexia nervosa, somatization disorder, and cognitive impairment were assessed only in the ECA.

CLINICAL SIGNIFICANCE QUESTIONS

In the ECA DIS, the clinical significance questions were as follows: Did you tell a doctor about (symptom[s])? Did you tell any other professional about (symptom[s])? Did you take medicine for (symptom[s]) more than once? Did (symptom[s]) interfere with your life or activities a lot? The NCS included the following clinical significance questions: Did you ever tell a doctor other than a psychiatrist about (symptom[s])? Did you ever see a mental health specialist about your (symptom[s])? Did you ever see any other professional about (symptom[s])? Did you ever take medication more than once because of (symptom[s])? How much did your (symptom[s]) ever interfere with your life or activities—a lot, some, a little, or not at all?

Although the questions assessing clinical significance were similar in the 2 studies, they were applied differently. In the DIS, for anxiety disorders, dysthymia, schizophrenia, somatization disorder, anorexia nervosa, and antisocial personality disorder, the clinical significance of a symptom was determined by using a decision tree of clinical significance questions posed to the respondent. When the respondent acknowledged talking to a physician or other professional, or taking medicine, or that the symptom interfered with his or her life a lot, then the symptom was treated as clinically significant. For these disorders, the diagnostic algorithms were constructed so that only clinically significant symptoms were considered. For ECA diagnoses of major depression, mania, and drug use disorders, and for virtually all of the NCS diagnoses, individual symptoms were not assessed for clinical significance. Rather, at the end of each diagnostic module, clinical significance questions were posed to those respondents who had sufficient symptoms for a potential diagnosis. The results of these questions could then be applied, independently of the diagnostic algorithm, to the persons who met symptom criteria for a disorder.

SERVICE USE

Service use during a 1-year period for mental health or substance use problems was assessed. For the ECA, treatment data came from the initial interview, or from the 6-month and 12-month follow-up interviews, depending on when the respondent's mental disorder was detected.[6] For the NCS, a retrospective report of treatment during the year before the interview was used. Ambulatory settings were categorized into specialty mental and addictive or general medical sectors. Combined, these 2 sectors are referred to as the *health systems sector*.[6]

CRITERION VALIDITY

To provide a test of the validity of the clinically significant mental disorders, several variables indicative of clinical severity and disability were chosen. From both surveys, lifetime history of suicidal ideation and suicide attempts, and whether the respondent was in full-time work or school, were used. From the NCS only, an item was used that inquired whether in the past month the respondent had been unable to work or had had to cut back on work or usual activities for 2 or more days. From the ECA only, receipt of disability compensation was used.

confidence in the reliability of the methods and the diagnoses themselves. Recent work[4] showed that the differences could be partially reconciled by accounting for changes in diagnostic criteria between *DSM-III* and *DSM-III-R* (particularly for the anxiety disorders), and the different age ranges in the 2 surveys. Several factors could not be controlled for, including different sampling frames, the use of a "commitment question" in the NCS, and stem question placement and other differences (eg, a more complete assessment of phobias) in the NCS diagnostic interview. Another factor that has been raised but not empirically examined is whether the cases identified by these different survey methods differ in the clinical significance of their symptoms. That is, do higher rates indicate an improved sensitivity of the methods and instrumentation to identify clinically significant cases, or an oversensitivity, in that the excess cases meet symptom criteria but are not clinically significant?

The concept of clinical significance of mental disorders plays a role in both of these issues. Clinical significance has been a part of the *DSM* definition of men-

DETERMINING RATES OF CLINICALLY SIGNIFICANT MENTAL DISORDERS IN THE ECA AND NCS

To maximize comparability, comparisons between the ECA and NCS were limited to the population aged 18 to 54 years. As in previous analyses, we focused on 1-year prevalence and used the single wave of data from the NCS and 2 waves of data from the ECA to maximize case ascertainment.[4] Prevalence rates of clinically significant disorders were determined by identifying the percentage of the population that met all criteria for diagnosis, including clinical significance. The ECA disorders with symptom-level assessment of clinical significance did not need revisions. To determine rates of clinically significant disorders when questions were asked for the syndrome as a whole, rather than symptom by symptom, we considered a positive response to any of the questions (for the NCS life interference question, "a lot") to indicate a clinically significant syndrome. Standard errors were calculated by Taylor series linearization[19] and 95% confidence intervals were constructed. **Table 1** summarizes the revisions to the diagnostic variables that were necessary for limiting cases to those with clinical significance.

Because no diagnostic algorithm was available for bipolar II disorder in the NCS, it was constructed de novo. We also created a past-year prevalence rate for the ECA's diagnosis of dysthymia. This rate is likely to be an overestimate, since persons with lifetime histories of both major depression and dysthymia were asked in the ECA to date only their most recent depressive "spell," whether it was due to dysthymia or major depression.

To approximate nontransient conditions of cognitive impairment in the ECA, such as dementia and mental retardation, respondents were selected who met criteria for "definite" or "possible" severe cognitive impairment at both waves of interviews. Assuming that proxy interviews were due to cognitive impairment in the respondent, persons with definite or possible severe cognitive impairment at wave 1 and a proxy interview at wave 2 were also chosen.

For *DSM-III* alcohol abuse, impairment in functioning was a required criterion. The DIS assessed this through questions about school or job problems, arrests, family objections to drinking, and other social problems. The standard clinical significance questions were not asked. For alcohol dependence, *DSM-III* criterion A required either pathological use or impairment in functioning. To estimate a clinically significant rate of alcohol dependence in the ECA, impairment in functioning was required whether or not there was a pattern of pathological use.

In the NCS, previously published rates of substance use disorders were based on "broad" definitions of disorder. For the clinically significant rates of substance abuse and dependence, the "narrow" definitions of disorder were used. The narrow abuse definition required meeting abuse criteria within the past year and having no history of substance dependence. The narrow dependence definition required ever having had a substance dependence disorder, having had symptoms in the past 12 months, and having had 3 or more substance-related problems during the past year. Clinical significance questions were asked in the NCS for both alcohol and other drug use disorders. For these analyses, questions were also taken from the UM-CIDI that most closely corresponded to the alcohol-related impairment questions in the DIS. If any one of the clinical significance or other impairment questions was answered positively for the narrowly defined substance use disorders, then the clinical significance criterion was met.

REVISING PREVALENCE RATES ON THE BASIS OF DATA FROM BOTH SURVEYS

To obtain revised prevalence rates for ages 18 to 54 years, we followed a conservative procedure previously used in an independent scientific analysis comparing the ECA and NCS.[20] For the supraordinate categories of any anxiety disorder, any mood disorder, and any substance use disorder, and for individual miscellaneous disorders, we selected the lower prevalence estimate of the 2 surveys. For disorders covered in only 1 survey, we used that estimate. To obtain the overall prevalences for "any mental disorder" with and without substance use disorders, we combined the chosen estimates after removing overlaps to account for comorbidity.

To obtain revised prevalence rates for persons 55 years or older, a group not interviewed in the NCS, rates in the ECA were accepted if ECA rates for ages 18 to 54 years were lower than NCS rates for that age group. If the NCS had the lower rate, the NCS rate that would have been obtained for the older age group was estimated by multiplying the NCS rate for the younger group by the ratio between estimates for younger and older subjects in the ECA. Finally, to obtain prevalence rates for all adults older than 18 years, the revised estimates for the older and younger age groups were weighted by the resident population census figures for 1990 and combined.

Differences in service use and validity indicators between respondents who met both diagnostic and clinical significance criteria and those who met diagnostic criteria without clinical significance were determined for each supraordinate diagnostic category. Because dysthymia had symptom-level clinical significance questions in the ECA, the "diagnosis only" group could not be calculated for total mood disorders. Instead, comparisons for unipolar major depression were made.

tal disorder starting with *DSM-III*.[12] Currently, *DSM-IV*[13] defines a mental disorder as

> a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is associated with present distress (e.g., a painful symptom) or disability (i.e., impairment in one or more important areas of functioning) or with a significantly increased risk of suffering death, pain, disability, or an important loss of freedom.[13(pxxi)]

The concept was further highlighted in *DSM-IV* by its inclusion in the diagnostic criteria for many disorders, in the context of distress or impairment in social, occupational, or other important areas of functioning.[13(p7)] For example, criterion E of generalized anxiety disorder states: "The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning."[13(p436)]

Despite the prominence of clinical significance in diagnostic criteria, there is currently no consensus as to how it should be defined or operationalized. In large epidemiologic surveys, direct clinical judgment is rarely

Table 1. Overview of Methods to Produce Rates of Clinically Significant Disorders*

	ECA	NCS
Simple phobia	NC	CS: syndrome
Social phobia	NC	CS: syndrome
Agoraphobia	NC	CS: syndrome
Generalized anxiety disorder	. . .	CS: syndrome
Panic disorder	NC	CS: syndrome
Obsessive-compulsive disorder	NC	. . .
Posttraumatic stress disorder	. . .	CS unavailable
MDE; unipolar major depression	CS: syndrome	CS: syndrome; removed episodes with duration <2 wk
Dysthymia	NC; new 1-y rate calculated†	CS: syndrome
Bipolar I	CS: syndrome	NC
Bipolar II	CS: syndrome, from mania and MDE modules	CS: syndrome; new diagnostic algorithm†
Schizophrenia	NC; *DSM-III* criterion C applied	See nonaffective psychosis
Nonaffective psychosis	. . .	NC; results from clinical interviews were used
Somatization	NC	. . .
Antisocial personality disorder	NC	No 1-y rates
Anorexia nervosa	NC	. . .
Severe cognitive impairment	Definite/possible SCI at wave 1, with definite/possible SCI or proxy interview at wave 2	. . .
Alcohol abuse	NC	NCS narrow definition of abuse; CS: syndrome; other impairment questions applied
Alcohol dependence	Impairment questions from abuse diagnosis	NCS narrow definition of dependence; CS: syndrome; other impairment questions applied: syndrome level
Drug abuse	CS: syndrome	NCS narrow definition of abuse; CS: syndrome; other impairment questions applied: syndrome level
Drug dependence	CS: syndrome	NCS narrow definition of dependence; CS: syndrome; other impairment questions applied: syndrome level

*ECA indicates Epidemiologic Catchment Area Program; NCS, National Comorbidity Survey; NC, no changes were needed for clinical significance; CS: syndrome, clinical significance questions were applied at the syndrome level; CS unavailable, clinical significance questions were unavailable for diagnosis; MDE, major depressive episode; SCI, severe cognitive impairment; and ellipses, diagnosis unavailable.

†Detailed methods available from one of us (W.E.N.).

used because of the high cost of clinical time and the large number of subjects, so proxy measures are used.[14] The developers of the Diagnostic Interview Schedule (DIS) used in the ECA, and the related University of Michigan version of the Composite International Diagnostic Interview (UM-CIDI) used in the NCS, placed structured questions in the interviews to address the clinical significance of symptoms and syndromes.[15-17] With these questions, clinical significance was assumed if the respondent's symptoms led him or her to mention them to a doctor or other professional, or if the symptoms interfered with his or her everyday life, or if the respondent took medication for the symptoms. Thus, clinical significance was related, if imperfectly, to concepts of symptom prominence or severity (and possibly the resulting distress), impairment in functioning, and treatment (including self-treatment) with medication.

The question arises, then, as to whether these questions, if applied to the existing prevalence estimates, will produce more realistic rates for policy and service planning, and to what extent differences in clinical significance affect prevalence differences between the ECA and the NCS. This article presents revised prevalence estimates of clinically significant mental disorders, with evidence of their validity, as an initial attempt to address these questions.

RESULTS

EFFECT OF THE CLINICAL SIGNIFICANCE CRITERION ON PREVALENCE RATES

In both the ECA and the NCS, prevalence rates were reduced when the available clinical significance questions were applied. For the NCS, these reductions were generally in the 30% to 40% range (**Table 2**). The largest change in NCS prevalence was 50% for social phobia (7.4% without the clinical significance questions and 3.7% with the questions), and the smallest change was 18% for generalized anxiety disorder (3.4% without the clinical significance questions and 2.8% with the questions). Overall prevalence rates for NCS "any mental disorder" and "any disorder including substance use disorders" were reduced by about one third when the clinical significance questions were applied.

Changes to the ECA prevalence rates (**Table 3**) were less striking than in the NCS, because for relatively few disorders in the ECA was symptom information collected independent of the clinical significance questions. For example, there was no change in the prevalence of anxiety disorders from previously published rates because only clinically significant symptoms were included in the diagnostic algorithms. In contrast, the prevalence of ECA unipolar major depres-

sion, for which clinical significance was asked at the syndrome level, was reduced by 23% when clinical significance questions were used, compared with a 39% decrease in the NCS. Severe cognitive impairment and drug use disorders among 18- to 54-year-olds in the ECA showed large decreases in prevalence when clinical significance data were applied. Table 3 also shows that the previous usage of a lifetime estimate of dysthymia without the clinical significance criterion grossly inflated the previously published 1-year estimates for any mood disorder in the ECA. The large reduction in dysthymia prevalence contributed to a 44% reduction in the rate of any mood disorder with clinical significance compared with previously published rates. Overall, the ECA prevalence rates for any disorder and any disorder including substance use disorders were reduced by about 17% in the 18- to 54-year age range.

In the group aged 55 years and older in the ECA, rates for mental disorders were generally lower than in the 18- to 54-year-old group, particularly for substance use disorders, panic disorder, and antisocial personality disorder. As expected, rates were higher for severe cognitive impairment in this age group. Overall, 15.2% of persons older than 54 years had a clinically significant mental disorder, and 17.3% had either a mental or substance use disorder. When age groups were combined in the ECA, 17.2% of the adult population had a mental disorder, and 22.5% had a mental or substance use disorder.

EFFECT OF THE CLINICAL SIGNIFICANCE CRITERION ON ECA-NCS DISCREPANCIES

Comparisons between the 2 surveys are not straightforward because of their different methods for assessing clinical significance. However, the 95% confidence intervals in Tables 2 and 3 show that, after the clinical significance criterion is applied, the NCS rates are usually the same or lower than the comparable ECA rates. The exceptions to this are social phobia, which had a significant change in criteria between *DSM-III* and *DSM-III-R* and was assessed in a different manner in the NCS, and bipolar disorder. Notably, differences in major depression rates are not statistically significant after the clinical significance criterion is applied, although the ECA point estimates remain lower than those of the NCS.

REVISED PREVALENCE ESTIMATES USING DATA FROM BOTH SURVEYS

Table 4 shows the revised estimates of clinically significant mental disorders. With the use of the conservative method of accepting the figure from the survey with the lower prevalence estimate when both surveys covered the disorder, the NCS was chosen for the supraordinate anxiety and substance use disorders categories, and the ECA was chosen for mood disorders. When only 1 survey covered the disorder, its estimate was used, so generalized anxiety disorder and posttraumatic stress disorder were taken from the NCS; obsessive-compulsive disorder, antisocial personality disorder, anorexia nervosa, somatization disorder, and severe cognitive impairment were taken from the ECA. For schizophrenia–nonaffective psychosis, we used the ECA estimate because the NCS's unique clinical reassessment method was applied to no other disorder in either survey. After accounting for comorbidity and combining the chosen estimates, the overall revised 1-year prevalence rate for 18- to 54-year-olds was 16.5% for any mental disorder not including substance use disorders and 20.9% for any mental or substance use disorder (Table 4). For all persons older than 18 years, the overall prevalence of any mental or substance use disorder was 18.5%, reflecting the lower prevalence of disorders in persons older than 54 years.

Table 2. One-Year Prevalence Rates From the NCS Study*

	Before Clinical Significance Criteria	With Clinical Significance Criteria
Any anxiety disorder	18.7 (17.1-20.3)	12.1 (10.7-13.5)
Any phobia	14.7 (13.3-16.1)	8.0 (7.2-8.8)
Social phobia	7.4 (6.6-8.2)	3.7 (3.1-4.3)
Simple phobia	8.6 (7.6-9.6)	4.4 (3.6-5.2)
Agoraphobia	3.7 (2.9-4.5)	2.2 (1.6-2.8)
Generalized anxiety disorder	3.4 (2.8-4.0)	2.8 (2.2-3.4)
Panic disorder	2.2 (1.6-2.8)	1.7 (1.1-2.3)
Posttraumatic stress disorder†	3.6 (2.8-4.4)	3.6 (2.8-4.4)
Any mood disorder	11.1 (9.7-12.5)	7.5 (6.3-8.7)
Major depressive episode	10.1 (8.7-11.5)	6.4 (5.4-7.4)
Unipolar major depression	8.9 (7.7-10.1)	5.4 (4.4-6.4)
Dysthymia	2.5 (2.1-2.9)	1.8 (1.4-2.2)
Bipolar I‡§	1.3 (0.9-1.7)	1.3 (0.9-1.7)
Bipolar II‡	0.2 (0.0-0.4)	0.2 (0.0-0.4)
Nonaffective psychosis‡	0.2 (0.0-0.4)	0.2 (0.0-0.4)
Any disorder	23.4 (21.6-25.2)	15.4 (13.6-17.2)
Any substance use disorder	11.5 (10.7-12.3)	7.6 (6.6-8.6)
Any alcohol use disorder	9.9 (8.9-10.9)	6.5 (5.7-7.3)
Any drug use disorder	3.6 (3.0-4.2)	2.4 (1.8-3.0)
Any disorder including substance use	30.2 (28.2-32.2)	20.6 (18.8-22.4)

*From 7599 subjects aged 18 to 54 years. Data are percentages with 95% confidence intervals in parentheses. NCS indicates National Comorbidity Survey.

†In the University of Michigan version of the Composite International Diagnostic Interview, no clinical significance questions were included in the posttraumatic stress disorder module. Rates without clinical significance were used in the "with clinical significance" column for any anxiety disorder, any disorder, and any disorder including substance use.

‡Bipolar I disorder, bipolar II disorder, nonaffective psychosis, and lifetime antisocial personality disorder were included in the "before clinical significance" column for any mood disorder, any disorder, and any disorder including substance use, to facilitate comparisons with previously published estimates.

§Bipolar I rate is from the Composite International Diagnostic Interview algorithm rather than clinical reappraisal. Clinical reappraisal rate was 0.3% (0.2%-0.5%).

SERVICE USE FOR MENTAL HEALTH OR SUBSTANCE USE REASONS

The percentage of persons with a clinically significant mental or addictive disorder who used services in the health systems sector was remarkably similar for the ECA

Table 3. One-Year Prevalence Rates From the ECA Study*

	Before Clinical Significance Criteria			With Clinical Significance Criteria		
	Aged 18-54 y (n = 11 432)	Aged ≥55 y (n = 8748)	All Ages (n = 20 180)	Aged 18-54 y (n = 11 432)	Aged ≥55 y (n = 8748)	All Ages (n = 20 180)
Any anxiety disorder†	*13.3 (12.5-14.1)*	*11.4 (10.4-12.4)*	*12.7 (12.1-13.3)*	13.3 (12.5-14.1)	11.4 (10.4-12.4)	12.7 (12.1-13.3)
Any phobia	*11.4 (10.6-12.2)*	*10.0 (9.2-10.8)*	*11.0 (10.4-11.6)*	11.4 (10.6-12.2)	10.0 (9.2-10.8)	11.0 (10.4-11.6)
Social phobia	*2.0 (1.6-2.4)*	*1.0 (0.8-1.2)*	*1.7 (1.5-1.9)*	2.0 (1.6-2.4)	1.0 (0.8-1.2)	1.7 (1.5-1.9)
Simple phobia	*8.5 (7.9-9.1)*	*7.2 (6.4-8.0)*	*8.1 (7.5-8.7)*	8.5 (7.9-9.1)	7.2 (6.4-8.0)	8.1 (7.5-8.7)
Agoraphobia	*5.0 (4.4-5.6)*	*4.1 (3.5-4.7)*	*4.7 (4.3-5.1)*	5.0 (4.4-5.6)	4.1 (3.5-4.7)	4.7 (4.3-5.1)
Panic disorder	*1.6 (1.4-1.8)*	*0.5 (0.3-0.7)*	*1.3 (1.1-1.5)*	1.6 (1.2-2.0)	0.5 (0.3-0.7)	1.3 (1.1-1.5)
Obsessive-compulsive disorder	*2.3 (1.9-2.7)*	*1.5 (1.1-1.9)*	*2.1 (1.9-2.3)*	2.3 (1.9-2.7)	1.5 (1.1-1.9)	2.1 (1.9-2.3)
Any mood disorder	10.4 (9.6-11.2)	7.2 (6.2-8.2)	9.5 (8.9-10.1)	5.7 (5.1-6.3)	3.4 (2.8-4.0)	5.1 (4.7-5.5)
Major depressive episode	6.5 (5.9-7.1)	3.7 (2.9-4.5)	5.8 (5.4-6.2)	5.2 (4.6-5.8)	2.7 (2.1-3.3)	4.5 (4.1-4.9)
Unipolar major depression	5.4 (4.8-6.0)	3.6 (2.8-4.4)	4.9 (4.5-5.3)	4.6 (4.0-5.2)	2.6 (2.0-3.2)	4.0 (3.6-4.4)
Dysthymia‡	5.7 (5.1-6.3)	5.0 (4.4-5.6)	5.5 (5.1-5.9)	1.7 (1.3-2.1)	1.6 (1.2-2.0)	1.7 (1.5-1.9)
Bipolar I	1.2 (1.0-1.4)	0.2 (0.0-0.4)	0.9 (0.7-1.1)	0.6 (0.4-0.8)	0.1 (0.1-0.1)	0.5 (0.3-0.7)
Bipolar II	0.6 (0.4-0.8)	0.1 (0.1-0.1)	0.4 (0.2-0.6)	0.3 (0.1-0.5)	0.1 (0.1-0.1)	0.2 (0.0-0.4)
Schizophrenia/schizophreniform	1.3 (1.1-1.5)	0.6 (0.4-0.8)	1.1 (0.9-1.3)	1.3 (1.1-1.5)	0.4 (0.2-0.6)	1.0 (0.8-1.2)
Antisocial personality disorder	2.0 (1.6-2.4)	0.0 (0.0-0.0)	1.5 (1.3-1.7)	2.0 (1.6-2.4)	0.0 (0.0-0.0)	1.5 (1.3-1.7)
Anorexia nervosa†	*0.1 (0.1-0.1)*	*0.0 (0.0-0.0)*	*0.1 (0.1-0.1)*	0.1 (0.1-0.1)	0.0 (0.0-0.0)	0.1 (0.1-0.1)
Somatization†	*0.3 (0.1-0.5)*	*0.3 (0.1-0.5)*	*0.3 (0.3-0.3)*	0.3 (0.1-0.5)	0.3 (0.1-0.5)	0.3 (0.3-0.3)
Severe cognitive impairment	1.3 (1.1-1.5)	7.1 (6.5-7.7)	2.9 (2.7-3.1)	0.2 (0.2-0.2)	2.1 (1.7-2.5)	0.8 (0.6-1.0)
Any disorder†	22.0 (21.0-23.0)	22.0 (20.8-23.2)	22.0 (21.2-22.8)	18.2 (17.2-19.2)	15.2 (14.2-16.2)	17.2 (16.5-18.1)
Any substance use disorder	11.7 (10.9-12.5)	2.8 (2.2-3.4)	9.3 (8.7-9.9)	9.7 (8.9-10.5)	2.6 (2.2-3.0)	7.7 (7.1-8.3)
Any alcohol use disorder	9.1 (8.3-9.9)	2.8 (2.2-3.4)	7.3 (6.7-7.9)	8.9 (8.3-9.5)	2.6 (2.2-3.0)	7.2 (6.6-7.8)
Any drug use disorder	4.0 (3.6-4.4)	0.1 (0.1-0.1)	2.9 (2.5-3.3)	1.5 (1.1-1.9)	0.1 (0.1-0.1)	1.1 (0.9-1.3)
Any disorder including substance use†	29.6 (28.4-30.8)	24.0 (22.6-25.4)	28.0 (27.0-29.0)	24.7 (23.7-25.7)	17.3 (16.1-18.5)	22.5 (21.8-23.4)

*Data are percentages with 95% confidence intervals in parentheses. ECA indicates Epidemiologic Catchment Area Program.

†For anxiety disorders, anorexia nervosa, and somatization disorder in the ECA, clinical significance was assessed at the symptom level, so rates without clinical significance could not be determined. In the "before clinical significance" columns, rates for those disorders with clinical significance are included in italics, and are also included in the rates of "any disorder" and "any disorder including substance use," to facilitate comparisons with previously published estimates (Regier et al[6]).

‡For dysthymia, clinical significance was assessed at the symptom level, so rates without clinical significance could not be determined. The rates presented in the "before clinical significance" columns are lifetime rates, to facilitate comparisons with previously published estimates (Regier et al[6]).

and the NCS (**Table 5**). With the clinical significance criterion in place, the ECA showed slightly higher overall rates of use in the general medical sector and lower rates of use in the specialty mental and addictive sector compared with the NCS. The major disparity in overall use between the 2 surveys was among persons with mood disorders because of differences in general medical use. Compared with previous analyses of the 2 surveys that did not use the clinical significance questions,[6,7] service use rates increased more for the NCS disorders than for the ECA disorders when clinical significance was required. As expected given the nature of the clinical significance questions, reported ambulatory service use was significantly lower for those who met symptom criteria without meeting the clinical significance criterion than for those who met the clinical significance criterion.

INDICATORS OF VALIDITY

The usefulness of the clinical significance indicators was evaluated by their association with suicidal ideas and behavior and indicators of disability (**Table 6**). Higher levels of suicidal ideation and attempts were associated with clinically significant disorders in both surveys for anxiety disorders and unipolar major depression, but not for substance use disorders. Indicators of disability (ie, receiving disability compensation and problems with work in the past month) showed similar trends for anxiety disorders and substance use disorders in the NCS.

Comorbidity between clinically significant and non–clinically significant disorders may have obscured differences in the validity comparisons. For example, further analyses showed that half the persons in the NCS whose substance use disorder did not meet the clinical significance criterion had another disorder that was clinically significant. In both surveys about one third of those with a disorder that did not meet the clinical significance criterion had a comorbid disorder that did.

COMMENT

The prevalence rates of mental and substance use disorders were substantially reduced by using data generated from the ECA and NCS clinical significance questions. These revised rates represented a group of persons with higher levels of disability and suicidal ideation than in previous estimates, which we consider preliminary evidence of the validity of the data. We also found a high degree of comorbidity between clinically significant and non–clinically significant syndromes. Discrepancies in the rates of mood disorders between the ECA and the NCS, a source of scientific controversy in the past, were brought

significantly closer together with use of the clinical significance data.

These analyses raise several methodologic issues. Although we found significant differences between those who met and did not meet clinical significance criteria as operationalized by the developers of the DIS and the CIDI, assessment methods need further study. For example, is it preferable to assess clinical significance at the symptom level, as with the ECA anxiety disorders, or at the syndrome level, as with the ECA and NCS mood disorders? Furthermore, it is not yet clear whether survey questions assessing clinical significance should be uniform across disorders, as in the ECA and NCS, or tailored to distinctive clinical characteristics and impairments of individual disorders. For example, the degree and quality of life interference experienced by persons with drug dependence will likely differ on aggregate from the life interference experienced by persons with social phobia. Such differences are not picked up by the current clinical significance questions. The usefulness of global assessments of functioning and their relationships to disorder-level assessments also need further clarification.[21]

The ongoing experience of comparing and reconciling the 2 surveys points out the importance of having explicit criteria for all aspects of mental disorders, including clinical significance, functional impairment, and subjective distress. This methodologic work also points out the complexity of community surveys of mental disorders and the large effects that seemingly small modifications can have on their results. It is not until these changes are understood that we can have a good idea whether rate differences are real or methodologic artifacts. It now appears that many of the differences in ECA and NCS rates are due to differences in methods.

The policy implications of epidemiologic survey results continue to resonate as mental health systems, both public and private, struggle to compete for shrinking health care dollars. Even relatively modest changes in the prevalence rate of mental disorders will have an impact on the planning of service systems. For example, in this study the change in overall prevalence of mental disorders from 29.6% in the ECA and 30.2% in the NCS, to 20.9% with the use of our conservative point estimates represents a decrease of about 13.3 million and 13.9 million Americans, respectively. For all adults older than 18 years, the revised estimate of 18.5% represents a decrease of about 19.2 million people from the ECA estimate of 28.0%. The good news is that these lower numbers are likely to represent a group more needful of services. Unfortunately, even when disorders are restricted to those with clinical significance, their numbers are still overwhelming for planning purposes. There are several unremediable sources of imprecision in our current data, which, if remedied, might have produced further reductions in prevalence rates. These include the lifetime time frame of the DIS and UM-CIDI, which does not allow for assessment of the presence of each symptom in the past year. Similarly, the clinical significance questions were asked only on a lifetime basis. Incorporating more specific dating of this information would probably reduce the prevalence rates, although at the expense of increased respondent burden. The imperfect specificity of the diagnostic instruments likely also contributes to overestimates of true prevalence rates. Finally, the clinical significance question about life and activity interference was different in the 2 surveys. The ECA used a dichotomous response option (yes [a lot] or no [not a lot]) and the NCS used a scaled response ("a lot," "some," "a little," or "not at all"). Persons who answered yes to the ECA question may have answered "some" if the NCS question had been used, and therefore would not have met the clinical significance criterion as we defined it.

As psychiatric epidemiology moves into its next generation, a major goal will therefore be to establish more

Table 4. Revised One-Year Prevalence Rates, Aged 18 Years and Older*

	Aged 18-54 y, %	Aged ≥55 y, %	All Ages, %	Population, Millions†
Any anxiety disorder‡	13.3	10.6	11.8	23.9
Any phobia‡	8.0	7.2	7.8	15.8
Social phobia‡	3.7	1.9	3.2	6.5
Simple phobia‡	4.4	3.9	4.3	8.7
Agoraphobia‡	2.2	1.8	2.1	4.3
Generalized anxiety disorder‡	2.8	NA	. . .	4.0
Panic disorder‡	1.7	0.5	1.4	2.8
Obsessive-compulsive disorder§‖	2.4	1.5	2.1	4.3
Posttraumatic stress disorder‡	3.6	NA	. . .	5.2
Any mood disorder§	5.7	3.4	5.1	10.3
Major depressive episode§	5.2	2.8	4.5	9.1
Unipolar major depression§	4.5	2.7	4.0	8.1
Dysthymia§	1.6	1.6	1.6	3.2
Bipolar I disorder§	0.6	0.1	0.5	1.0
Bipolar II disorder§	0.3	0.1	0.2	0.4
Schizophrenia/ schizophreniform§	1.2	0.4	1.0	2.0
Antisocial personality disorder§	2.0	0	1.5	3.0
Anorexia nervosa§	0.1	0	0.1	0.2
Somatization§	0.2	0.3	0.2	0.4
Severe cognitive impairment§	0.2	2.0	0.7	1.4
Any mental disorder	16.5	13.2	14.9	30.2
Any substance use disorder‡	7.6	2.1	6.0	12.1
Any alcohol use disorder‡	6.5	2.0	5.2	10.5
Any other drug use disorder‡	2.4	0.2	1.7	3.4
Any mental or substance use disorder	20.9	14.2	18.5	37.5

*NA indicates rates not available in Epidemiologic Catchment Area Program (ECA) or National Comorbidity Survey (NCS); ellipses, not applicable.

†Population estimates are based on July 1, 1999, US census estimate of 202 491 000 for resident population, 18 years and older. For generalized anxiety disorder and posttraumatic stress disorder, because of lack of data for population older than 54 years, population estimates are based on July 1, 1999, US census estimate of 144 562 000 for resident population, 18 to 54 years old.

‡The NCS *DSM-III-R* disorders.

§The ECA *DSM-III* disorders.

‖The ECA rate for obsessive-compulsive disorder not comorbid with another anxiety disorder is 1.2%.

Table 5. One-Year Disorders With and Without Clinical Significance: Percentage of Persons Receiving Ambulatory Treatment in the Past Year for Mental Health or Substance Use Reasons, Aged 18 to 54 Years*

	Any Anxiety Disorder		Any Mood Disorder (+CS)	Unipolar MDD		Any Substance Abuse/Dependence		Any Mental Disorder (+CS)	Any Disorder Including Substance (+CS)
	–CS	+CS		–CS	+CS	–CS	+CS		
ECA									
Unweighted n	. . .	1874	738	110	551	286	1104	2554	3215
SMA	. . .	16.3	34.4	11.9	34.3†	7.9	11.2	17.6	14.4
General medical	. . .	14.8	30.6	7.0	30.0†	3.8	10.8†	16.2	13.7
Health systems	. . .	27.4	53.9	17.9	53.7†	10.4	18.2‡	29.1	24.1
NCS									
Unweighted n	482	905	594	257	445	319	582	1193	1584
SMA	4.0	21.5†	32.6	3.5	34.1†	8.2	16.1‡	23.0	19.1
General medical	2.0	13.6†	19.1	4.5	17.5†	2.6	6.8§	14.3	11.4
Health systems	5.6	28.5†	40.6	7.5	42.4†	9.8	19.6†	30.4	25.3

*MDD indicates major depressive disorder; –CS, persons who met symptom but not clinical significance criteria; +CS, persons who met both symptom and clinical significance criteria; ECA, Epidemiologic Catchment Area Program; SMA, specialty mental and addictive disorders service sector; NCS, National Comorbidity Survey; and ellipses, not applicable. For NCS any anxiety disorder, posttraumatic stress disorder is not included in either –CS or +CS category. *P* values are for Wald χ^2 comparing +CS and –CS for any anxiety disorder, unipolar major depressive disorder, and any substance abuse/dependence.
†$P<.001$.
‡$P<.01$.
§$P<.05$.

Table 6. One-Year Disorders With and Without Clinical Significance: Percentage of Persons With Specified Validity Indicators, Aged 18 to 54 Years*

	Any Anxiety Disorder		Unipolar Major Depression		Any Substance Abuse/Dependence	
	–CS	+CS	–CS	+CS	–CS	+CS
ECA						
Unweighted n	. . .	1874	110	551	286	1104
Disability compensation	. . .	6.7	3.0	6.0	2.4	4.1
Full-time work or school	. . .	56.5	62.7	54.2	69.3	73.8
Lifetime history of suicidal ideation	. . .	33.3	29.0	58.5†	33.6	28.3
Lifetime history of suicide attempt	. . .	12.4	6.5	21.2†	8.9	9.6
NCS						
Unweighted n	482	905	257	445	319	582
Disability ≥2 d in past month						
Unable to work	9.6	22.3†	20.7	24.1	9.4	18.0‡
Cut back on work	26.9	40.3‡	33.8	48.1§	31.2	29.9
Full-time work or school	58.6	51.0§	49.9	56.8	68.9	60.9
Lifetime history of suicidal ideation	27.2	47.4†	35.7	57.8†	37.2	37.1
Lifetime history of suicide attempt	6.5	19.5†	7.3	21.1†	9.9	15.3

*–CS indicates persons who met symptom but not clinical significance criteria; +CS, persons who met both symptom and clinical significance criteria; ECA, Epidemiologic Catchment Area Program; NCS, National Comorbidity Survey; and ellipses, not applicable. For NCS any anxiety disorder, posttraumatic stress disorder is not included in either –CS or +CS category. *P* values are for Wald χ^2 comparing –CS and +CS for any anxiety disorder, unipolar major depression, and any substance abuse/dependence.
†$P\leq.001$.
‡$P\leq.01$.
§$P\leq.05$.

precise and clinically relevant prevalence estimates than did the ECA and the NCS, the seminal surveys of this generation. Several challenges lie ahead. First, the field has progressed to a point where large, expensive "catch-all" surveys will be replaced by surveys targeted to specific goals. Unmet treatment need is sure to be one goal; causal and protective factors are sure to be another, but the ideal design for one goal is not the same as that for the other. Second, efforts to improve the validity of the DIS and CIDI disorders should continue. Third, advances in the operationalization of disability constructs and their translation into survey instruments should be incorporated into research plans. Future population-based surveys should include full assessments of functioning and link level of functioning to the course of mental disorders over time. The development and psychometric testing of the second World Health Organization Disability Assessment Schedule for administration by lay interviewers holds promise in this regard.[22,23]

Further work also needs to be done in defining treatment need, beyond current diagnostic notions. Persons with subsyndromal psychiatric symptoms can have

significant disability and therefore may require treatment.[24-26] These subsyndromal cases represent persons who may never meet disorder criteria, who may be in the prodromal phase of a full-blown mental disorder, or who, because of treatment or spontaneous remission, no longer meet full criteria for a disorder.[27] Longitudinal descriptive and experimental studies would help clarify this heterogeneous group's characteristics and need for mental health services. Very little is known about the clinical significance and treatment needs for disorders that are not currently included in epidemiologic surveys, such as most personality disorders, adjustment disorders, and impulse control disorders. In addition, estimates of treatment refusal by those with clinically significant disorders would be helpful to complete the picture of unmet need. Finally, the lack of any definitive epidemiologic study of the mental health needs of children in the United States has been a hindrance. Estimates of treatment need in this group vary widely, and all are based on limited samples.[28] The developmental consequences of childhood-onset disorders, including their persistence into adulthood, are necessary to form a clinically and developmentally sensitive epidemiology of mental disorders.

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